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Wiring Diagrams and Associated Documents

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Wiring Diagrams and Associated Documents

Model: All

Production: All

OBJECTIVES

After completion of this module you will be able to:

- Demonstrate accurate and efficient use of Wiring Diagrams.
- Understand general conventions that dictate the format of how wiring schematics are drawn.
- Locate correct schematics using a variety of different methods.
- Correctly interpret symbols and identifying common devices that are often used in the wiring schematics.
- Identify the location of critical components used in the schematics.
- Demonstrate a knowledgeable understanding of associated documentation often used in conjunction with the wiring schematics.

Introduction

Schematics

The schematics divide the vehicle electrical system into individual circuits. Components which interact with that circuit are shown on the same schematic.

In order to provide a standard for the way in which a Wiring Diagram (SSP) is written and read, there are general rules that apply. Components are drawn in such a way that their general layout and function are self-explanatory. They are arranged on the page so that the current path can be followed from **positive** (top) to **negative** (bottom).

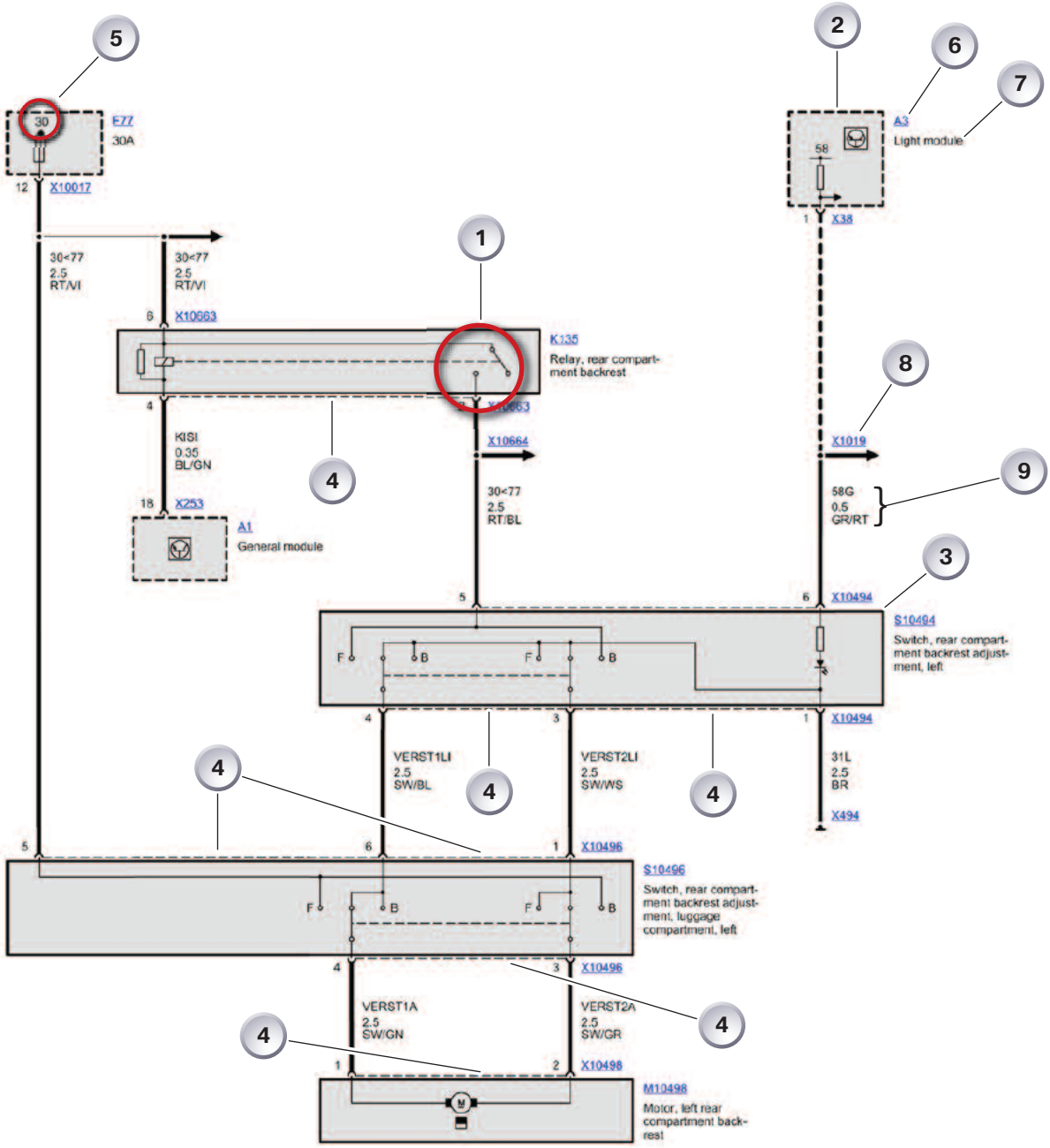
General Guidelines

Wiring Diagram **"SSP-SP0000020123 LH Rear Seatback Adjustment"** will be used as an example.

1. Switches and relays are always shown in their rest position. (e.g. K135)
2. A component drawn in a dotted line indicates that only part of the component is shown. (e.g. A3)
3. A component drawn as a solid line indicates that all of that component is shown. (S10494)
4. The dotted line between pins 4, 2 of connector X10663, pins 5, 6 and 4, 3, 1 of connector X10494, pins 5, 6, 1 and 4, 3 of connector X10496, pins 1, 2 of connector X10498, indicate that all the pins belong to that connector.
5. Terminal operation is usually noted within a component box. (e.g. 15, 30, etc.)
6. Component designation is shown to the right of the box. (e.g. A3, K135, etc.)
7. Component name is shown under Component designation. (e.g. Light module; Relay, rear compartment backrest)
8. Splice points are shown between components, noted by a connector number. (e.g. X10664, X1019, etc.)
9. Signal name, wire cross section and color are noted as a list to the right of the wire between components. (e.g. 58G, 0.5, GR/RT). Of note, the wire cross section is given in square millimeters (mm^2).

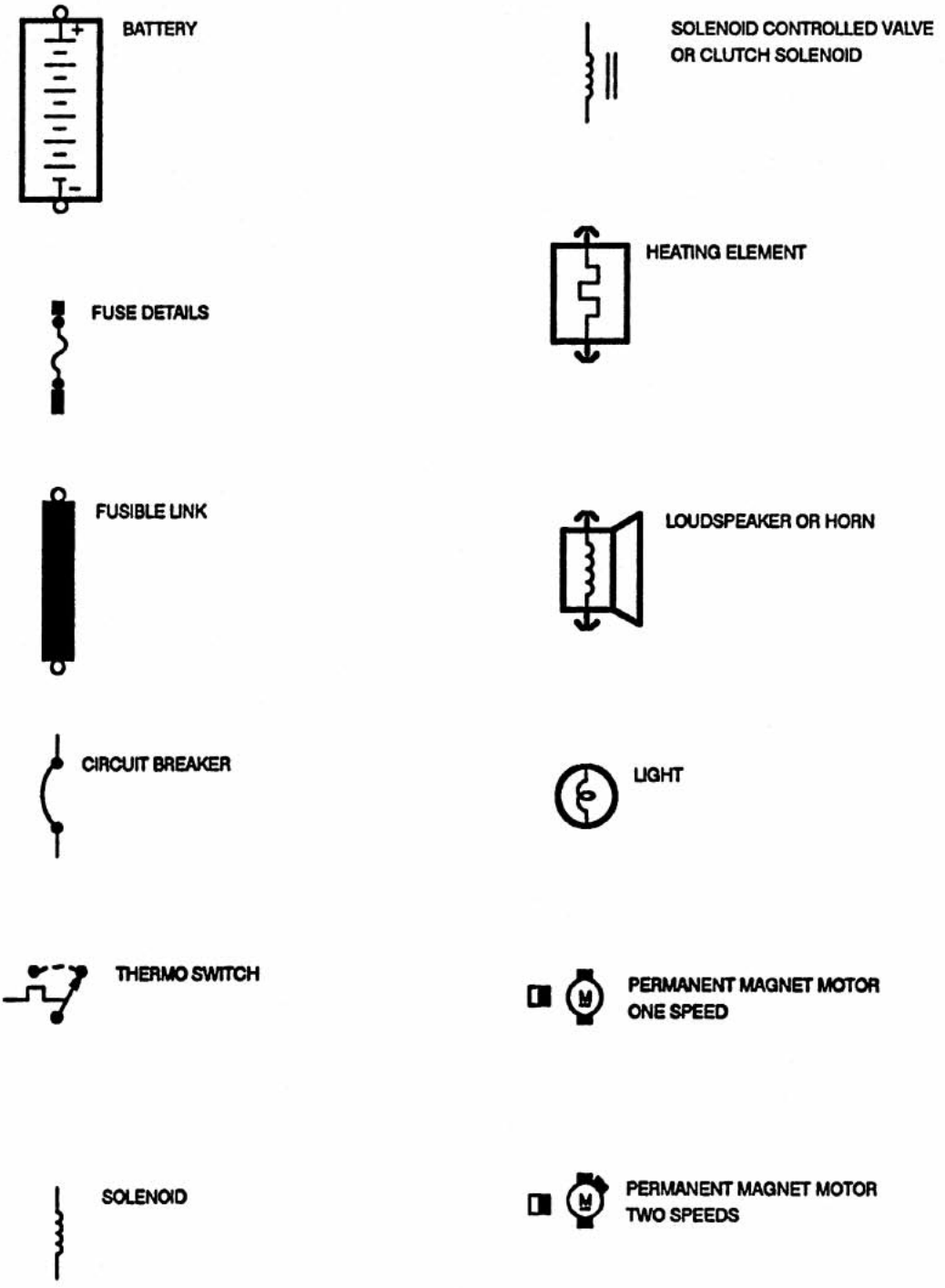
To obtain more information on a component or signal select any blue hotbox on the wiring diagram (additional information should appear to the left of the SSP, such as EBO, STA, PIB, etc.). It is also helpful to press the **Installation** button, on the lower left of the navigation bar on ISTA, after selecting a component's blue hotbox. This will show you all relevant SSP regarding the component you just selected.

SSP-SP0000020123 LH Rear Seatback Adjustment

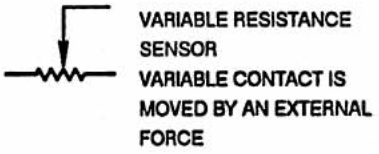


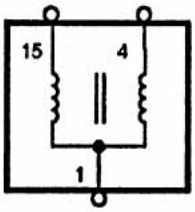
Circuit Symbols

In order to work effectively with the ETM, the technician has to understand the meaning of the symbols used to represent electrical components and connections.



Circuit Symbols (cont.)


VARIABLE RESISTANCE SENSOR
VARIABLE CONTACT IS MOVED BY AN EXTERNAL FORCE



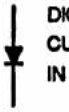
IGNITION COIL

VARIABLE RESISTOR
RESISTANCE IS CHANGED BY TEMPERATURE OR PRESSURE

CONTROL/POWER ELECTRONICS

INDUCTIVE SENSOR

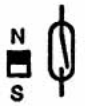
RADIO


DIODE
CURRENT CAN FLOW ONLY IN DIRECTION OF ARROW

TRANSISTORIZED SWITCH

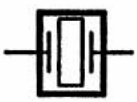
OXYGEN SENSOR

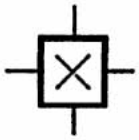
ZENER DIODE
TO REGULATE VOLTAGE



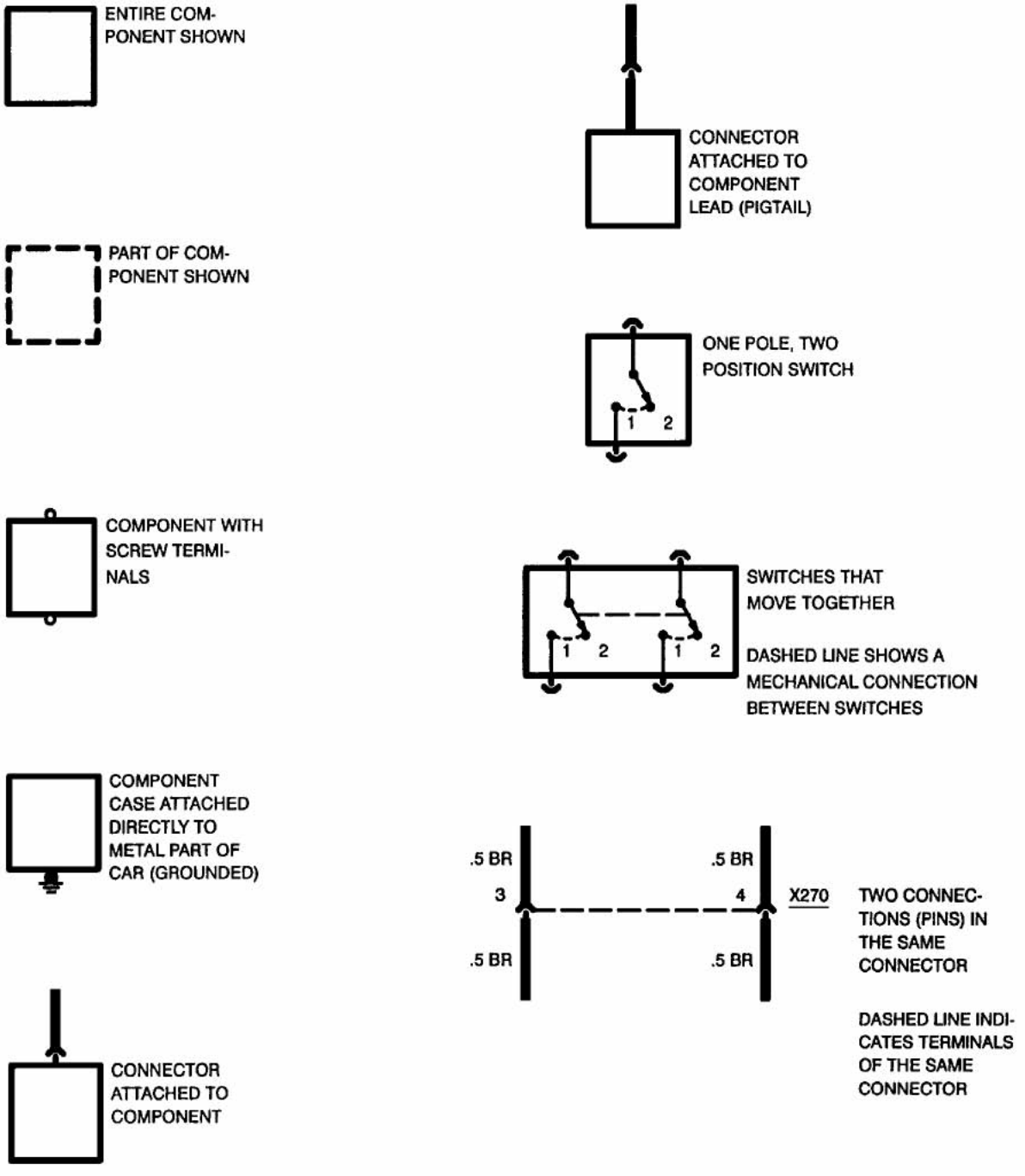
VEHICLE SPEED SENSOR

LIGHT EMITTING DIODE

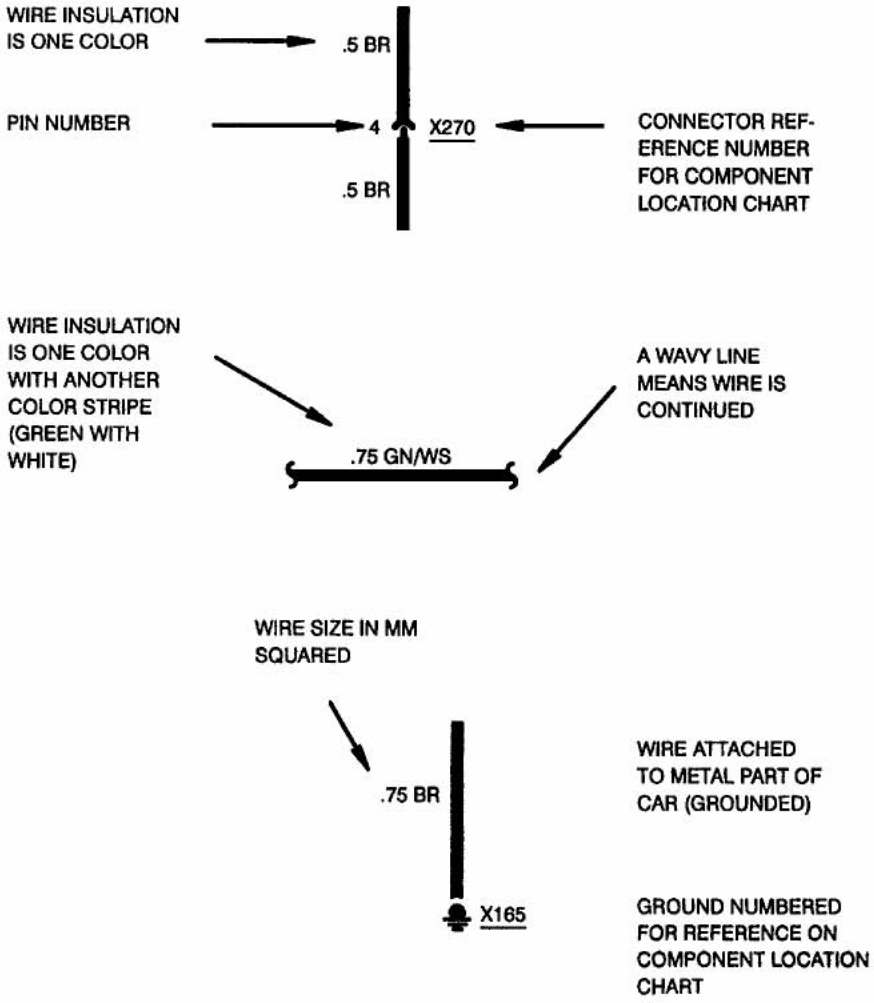

KNOCK SENSOR


HALL SENSOR

Circuit Symbols (cont.)



Circuit Symbols (cont.)



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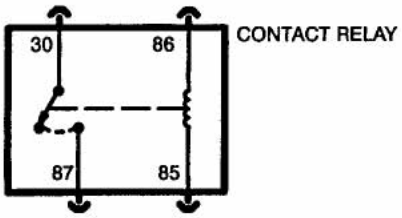
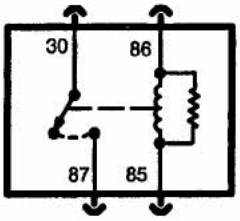
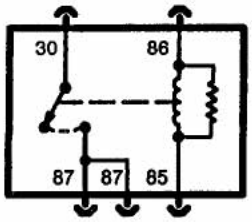


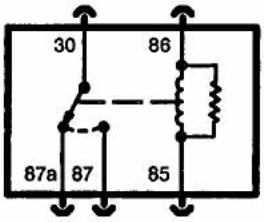
CONTACT RELAY



RELAY WITH RESISTOR ACROSS WINDING



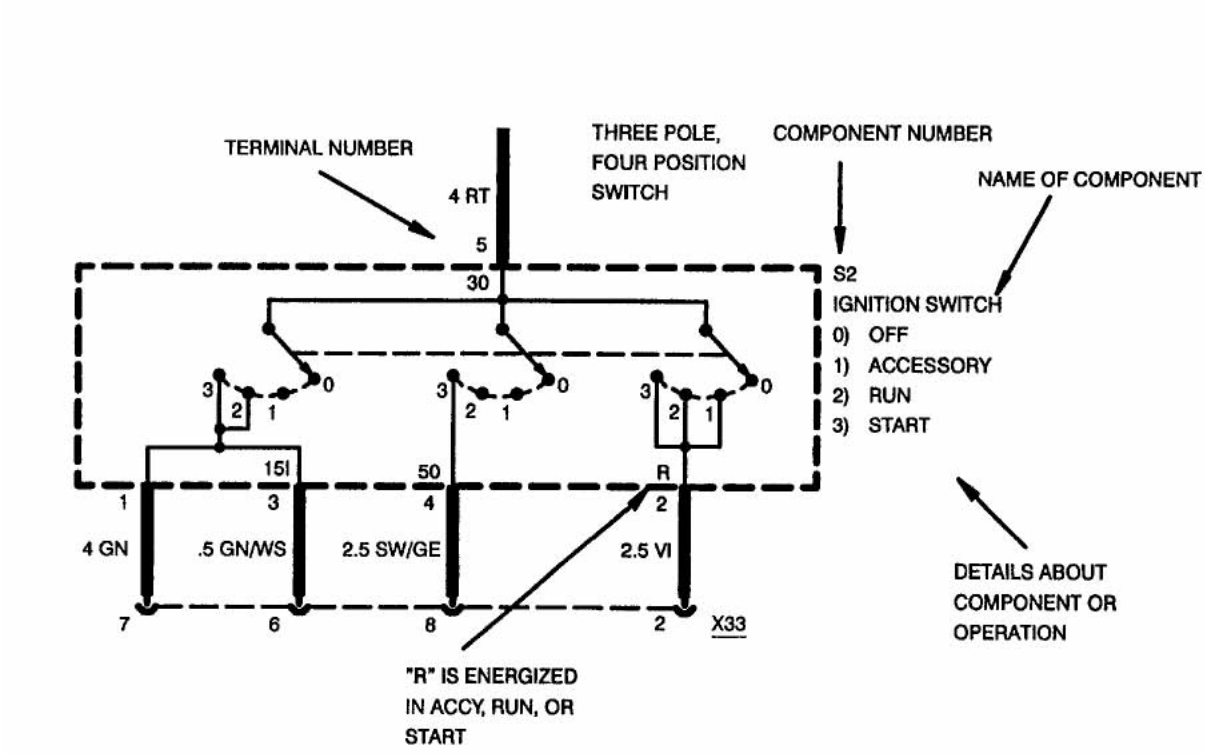
CONTACT RELAY WITH TWO OUT-PUTS



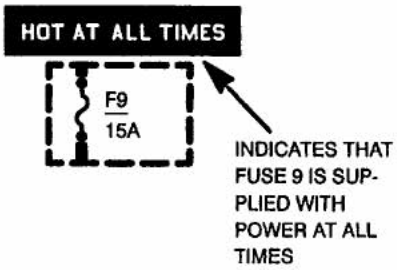
CHANGEOVER RELAY WITH TWO OUTPUTS

TERMINAL NUMBER	DESCRIPTION
30	RELAY INPUT
85	RELAY OUTPUT (WINDING)
86	RELAY INPUT (WINDING)
87	RELAY OUTPUT (ENERGIZED)
87a	RELAY OUTPUT (AT REST)

Circuit Symbols (cont.)

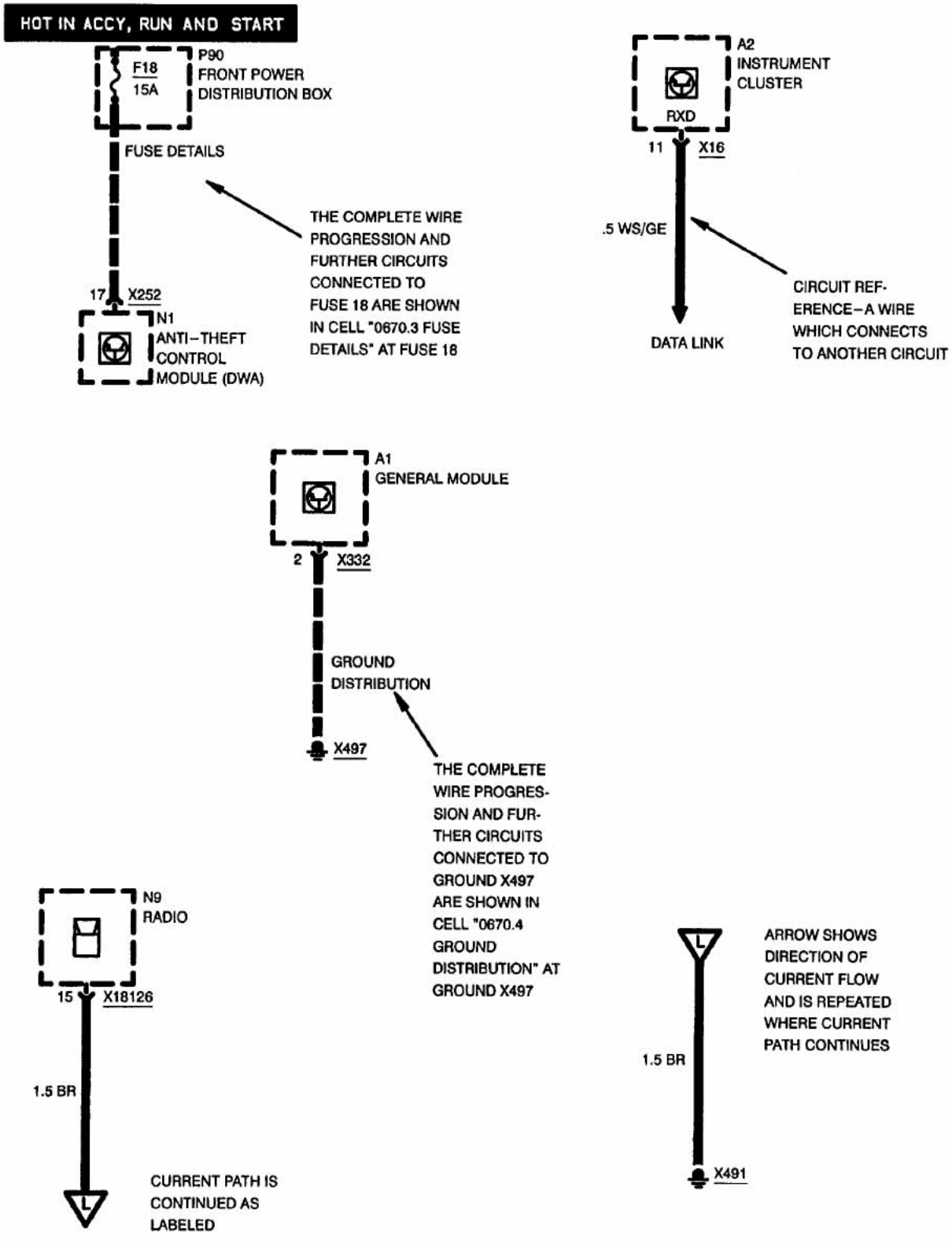


TERMINAL NUMBER	DESCRIPTION	TERMINAL NUMBER	DESCRIPTION
50	VOLTAGE: IGNITION SWITCH IN START	15I	VOLTAGE: IGNITION SWITCH IN RUN
30	VOLTAGE: SUPPLIED AT ALL TIMES	R	VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START
15	VOLTAGE: IGNITION SWITCH IN RUN OR START	31	GROUND

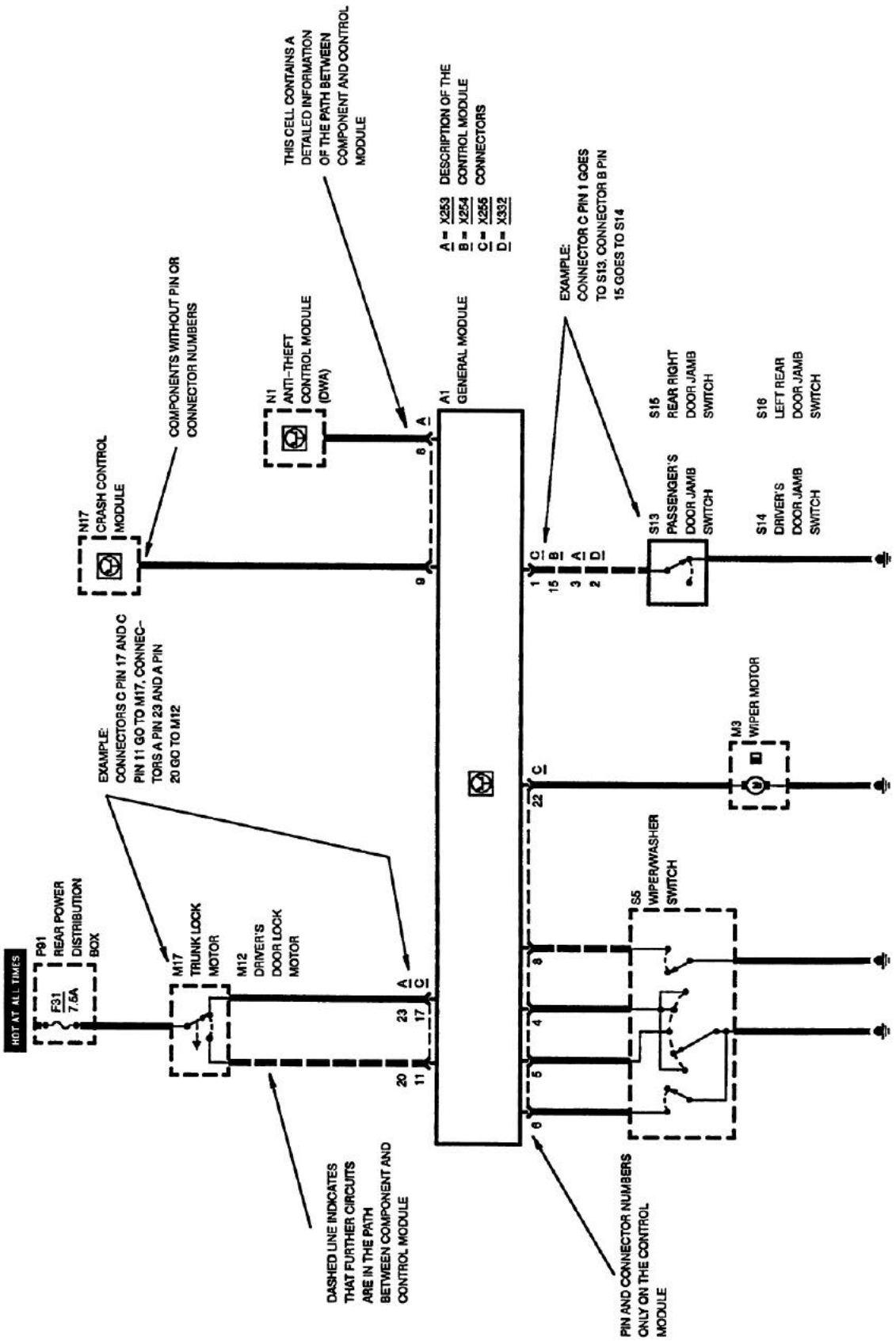


POWER STATUS	DESCRIPTION
HOT AT ALL TIMES	VOLTAGE: SUPPLIED AT ALL TIMES
HOT IN RUN AND START	VOLTAGE: IGNITION SWITCH IN RUN OR START
HOT IN ACCY, RUN AND START	VOLTAGE: IGNITION SWITCH IN ACCESSORY, RUN OR START

Circuit Symbols (cont.)



Circuit Symbols (cont.)



Wire Color Abbreviations

Abbreviation	English	*German*
TR	Transparent	*Transparent*
WS	White	*Weiß*
VI	Purple	*Violett*
BL	Blue	*Blau*
BR	Brown	*Braun*
GE	Yellow	*Gelb*
GR	Gray	*Grau*
GN	Green	*Grün*
OR	Orange	*Orange*
RS	Pink	*Rosa*
RT	Red	*Rot*
SW	Black	*Schwarz*

NOTES

NOTES PAGE